

이중 노즐을 이용한 폴리다이메틸실록산-  
그래파이트 코어 쉘 구조의 3차원 프린팅

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Recently, a wearable device beyond the flexible and stretchable electronic devices has been one of the hottest issues in convergence technology. Polydimethylsiloxane (PDMS) is a suitable material for the flat substrate of an electric circuit, but the utilization of PDMS itself into a conductive material is challenging due to its chemical inertness. In this study, the insertion of graphite ink into the inside of PDMS was suggested. Using the double-nozzle system, the uncured PDMS and the graphite ink was simultaneously 3D printed through the outside and inside nozzle respectively. The maintenance capability of printing form could be high enough since the PDMS encircled and held graphite ink stably. This PDMS-graphite core shell complex showed exceptional elongation and excellent recovery capability against strain stress. Additionally, we could observe the dramatic change of conductivity when an external stress was applied to the complex. This method is efficient, handy, and reliable, hence we assure that it is worthy for further studies as a process of stretchable and flexible material for electronic wearable device fabrication.